Initiation Package for Endangered Species Act Consultation – Bootsole Project

I. INTRODUCTION

The purpose of this initiation package is to review the proposed Bootsole Project in sufficient detail to determine to what extent the proposed action may affect any of the threatened, endangered, proposed, or sensitive species and designated or proposed critical habitats listed below. In addition, the following information is provided to comply with statutory requirements to use the best scientific and commercial information available when assessing the risks posed to listed and/or proposed species and designated and/or proposed critical habitat by proposed federal actions. This initiation package is prepared in accordance with legal requirements set forth under regulations implementing Section 7 of the Endangered Species Act (50 CFR 402; 16 U.S.C. 1536 (c)).

Threatened, Endangered, Proposed Threatened or Proposed Endangered Species

The following listed and proposed species may be affected by the proposed action:
Sierra Nevada Yellow-legged Frog *(Rana sierrae)* **E**

Critical Habitat
The Bootsole Project does not overlap any designated critical habitat.

Species not included in consultation package
This project was entered into the IPAC website on January 4, 2021. One species included on the species lists obtained from U.S. Fish and Wildlife Service (USFWS) and the National Oceanic Atmospheric Administration National Marine Fisheries Service was eliminated from analysis due to lack of species distribution, suitable habitat and lack of designated critical habitat. These species are listed below:

Delta smelt (*Hypomesus transpacificus*)

II. CONSULTATION TO DATE

To date no formal consultation has been conducted for the Bootsole Project for any listed species. This is the first formal request for consultation for the Sierra Nevada Yellow-legged frog as it pertains to this project area.

III. DESCRIPTION OF THE PROPOSED ACTION

Description of Project

Description of the Proposed Action:

The project proposes treatments in conifer stands that would selectively remove conifers, using variable density silviculture prescriptions to promote a mixture of tree sizes and structural diversity throughout the project area. Residual stands would be more open, increasing the

amount of available soil moisture and sunlight for individual trees. Prescriptions would generally retain old-growth and large trees while promoting shade-intolerant, fire-resistant conifers. Select conifers would be removed using a combination of ground-based mechanical thinning, hand thinning, hand piling, grapple piling, mastication and prescribed burning. Following conifer removal, prescribed burning could be used to reduce surface fuels throughout the project area.

Aspen and meadow treatments would remove encroaching conifers from the interior of meadows and aspen stands and thin conifers in the surrounding forest areas to minimize seed sources and prevent future conifer encroachment.

The project also proposes to improve system roads and obliterate unauthorized non-system roads that are negatively impacting watershed condition. Obliteration of roads that are not part of the National Forest Transportation System (non-system roads) would be completed using a combination of tracked mechanical equipment and manual labor with hand tools.

Project activities may occur beginning in Spring 2021. Proposed treatments are described below by treatment and vegetation type. Mechanical variable density thinning, mechanical fuels, hand thin, and prescribed burn only units are shown in Figure 2. The acreage of each treatment type is summarized in Table 1.

Table 1: Bootsole Project Acreage by Treatment Type

Silviculture Treatment	Acres	Explanation
Mechanical Thin	≤ 3,080[1]	General Forest Stands: Removal of conifers <30" DBH by variable density thinning. Follow up underburn and/or mechanical fuels treatment would take place in some units. Aspen and Meadows: Removal of conifers located in the interior of aspen stands/clones, meadows, and meadow buffers and within a 150' extended treatment zone (ETZ). Follow up underburn would take place in some units.
Mechanical Fuels Treatment	359	Hand thin or mechanically thin trees <11.0" DBH with machine piling or mastication of brush and activity created slash and specified existing down material. Follow up underburn or pile burn would take place in these units.
Hand Thin	331	Hand thin trees <6.0" DBH with hand piling or lop and scatter of activity created slash and specified existing down material.1 Follow up pile burning or underburning would take place.
Prescribed Burn Only	463	Utilize low to moderate intensity prescribed fire to reduce surface accumulation of vegetative material. Areas may receive hand thinning pretreatments to meet burn plan goals. Existing roads and natural barriers would be utilized as fire lines to minimize new ground disturbance although additional improvements or fire line construction around the burn area perimeter may be necessary.
Total Treatment Acres	4,233	

Mechanical Thin

General Forest Stands

1 Where mechanical treatments are not possible due to site sensitivity or prohibitive access, units may be hand thinned and trees >6" DBH removed.

The project proposes to remove conifers less than 30 inches diameter at breast height (DBH) to promote resistance to disturbance (i.e. insects/disease, wildfire) and develop a more resilient stand that can better withstand current and predicted future conditions.

Conifer removal would be accomplished by individual tree selection utilizing Variable Density Thinning (VDT). Variable density thinning is a compilation of various thinning treatment elements; dense groups/clumps of trees, canopy openings (gaps) where few or no trees exist; and widely spaced trees within the matrix. This combination of activities would promote a mixture of tree sizes within a stand and across the landscape, restoring structural diversity while increasing fire resilience. A portion of smaller, healthy/vigorous trees would be left for diversity, structure, and to provide for the next generation of forest. Canopy cover and basal area would vary based upon stand type and stand potential.

In areas proposed for mechanical treatment, mechanical ground-based equipment would be used to harvest select trees greater than or equal to three inches DBH up to 30 inches DBH. Whole-tree yarding would be used when possible. Conifers ranging from 10.0 to 29.9 inches DBH would be removed and processed as sawlogs. Conifers ranging from 3.0 to 9.9 inches DBH would be removed as biomass chips where access for mechanical ground-based equipment and/or chip vans is not restricted. Existing downed wood would also be removed as biomass where levels are above desired condition. Where chip removal is not possible, biomass-size conifers may be treated on site through various mechanisms including: mastication; hand thin (using chainsaws), pile and burn; lop and scatter; and mechanical pile and burn. Equipment would generally be restricted to slopes of 35 percent or less although equipment could work on short pitches of slopes up to 45 percent outside of Riparian Conservation Areas.

Follow-up treatment may occur in some units to achieve desired conditions and remove material less than 3” DBH using mastication, pile and burn, or lop and scatter. Underburning may occur throughout some general forest stands as a secondary treatment.

Aspen

The project proposes to remove conifers within aspen stands to improve stand condition and wildlife habitat. Conifers would be removed from within aspen stands and where aspen occurs as a minor component within other forest types. Treatment would entail the removal of conifers located in the interior of aspen stands/clones and within a 150-foot extended treatment zone (ETZ) from the outer most aspen stem. Trees greater than 30.0 inches DBH would be removed. Exceptions to conifer removal in these areas would be shade-intolerant, fire-resistant trees that exhibit old growth/legacy characteristics such as platy bark, flat top; indicating their co-existence with the aspen prior to fire exclusion policies; these trees would need to show characteristics that indicate they are not a threat to aspen including slower growth and reduced seed production to be retained. Mechanical removal would be used where possible with hand thinning occurring in areas where mechanical treatment is not feasible due to site sensitivity, slope steepness, or accessibility.

Species such as juniper, lodgepole pine and white fir would not be retained. Lodgepole pine is a prolific seed producer and produces viable seed at an early age thus giving it a competitive edge in establishment and succession without disturbance. Also, white fir generally produces more cones along or within openings than in adjacent closed stands and is considered shade tolerant.

This shade tolerance allows white fir to become established in the understory of aspen and gradually replace aspen as the dominant tree.

Aspen groves would be underburned to promote desired herbaceous plants, aspen regeneration (suckering), and reduce residual conifer regeneration. If above treatments fail to stimulate aspen growth response in decadent, declining aspen stands, aspen stems may be cut to stimulate new growth response. Temporary fencing around aspen stands may be installed post-treatment if needed based on monitoring. The temporary fencing would be installed and maintained by the Forest Service and would remain in place until determined to be effective by the interdisciplinary team.

Meadows

Removal of conifers within and around meadows would be accomplished using the same conifer parameters as the aspen units. Mechanical removal would be used where possible with hand thinning occurring in areas where mechanical treatment is not feasible due to site sensitivity, accessibility, or slope steepness. Meadow extended treatment zones (ETZs) would occur from existing meadow edges and extend up to 100 feet into forested stands. Meadow boundary delineators may include vegetation and soil composition, topography, changes in landform, or changes in soil moisture. Conifers within meadow ETZs would be thinned, targeting lodgepole pine and white fir for removal of seed sources to maintain meadow habitats. Prescribed burning would be used in meadows to reduce conifer regeneration and promote herbaceous vegetation.

Thinning in aspen and meadows is not designed to meet objectives associated with fuels or stand densities, therefore the removal of trees greater than 30.0 inches DBH is permissible consistent with SNFPA ROD. (USDA 2004b, p.51).

Mechanical Fuels

Forest fuels less than 11 inches in diameter would be removed from 359 acres of the project area. This area includes stands that have desired spacing of overstory trees but abundant understory and ladder fuels. Thinned material would be chipped and removed as biomass where access for mechanical ground-based equipment and/or chip vans is not restricted. Where chip removal is not possible, biomass-size conifers may also be treated on site through various mechanisms including mastication; hand thin (using chainsaws), pile and burn; lop and scatter; and mechanical pile and burn.

Hand Thin

Hand thinning would be used to remove fuels less than 6 inches DBH from the 300-acre California Spotted Owl Protected Activity Center (PAC). California Spotted Owl PACs are designed to provide habitat for California Spotted Owls. Treatments are intended to help provide quality nesting and roosting habitat for current and/or future occupants, and to make the habitat more resilient to future disturbance. Fire-resistant trees would be promoted and shade-tolerant conifers would be prioritized for removal.

Stands would be hand thinned as needed to facilitate prescribed burning and to promote legacy2 and critical habitat trees. Thinned materials would be piled for later burning. Areas around any

2 Legacy trees display old-growth characteristics. For ponderosa and Jeffrey pine a legacy tree is defined as a tree that has the

critical habitat trees including nesting, roosting, and high-value legacy trees would be raked. Underburning would occur in these areas once the hand thinning and pile burning treatments have been completed.

Hand thinning may also occur in stands identified for mechanical thinning or mechanical fuels when mechanical treatments are not possible due to site sensitivity or prohibitive access.

Prescribed Fire

Within stands that do not meet conditions for thinning treatments, prescribed burning would be used to reduce heavy fuel loading of small diameter trees and promote dominant/co-dominant trees. This would result in creating a more resilient ecosystem less prone to catastrophic wildfire. Approximately 3,770 acres of the project area would also be analyzed for reintroducing fire to the ecosystem through prescribed burning as a secondary treatment. Where it is not feasible or recommended to underburn, pile burning would be used to remove fuels. Prescribed burning in this project is planned with an efficient economy-of-scale approach. Incidental hand thinning with chainsaws may occur as needed to facilitate prescribed burning.

Transportation Management

Road Reconstruction and Maintenance

The project proposes to repair, maintain, and/or reconstruct National Forest System roads that are contributing to watershed impacts. Action would be taken to improve road drainage, reduce erosion caused by concentrated road runoff, and reduce sedimentation from roads into the stream network. Specific miles of roads and road segments will be identified during project planning. Road treatments would be prioritized in areas with insufficient drainage, issues with water crossings, and roads contributing direct sedimentation to waterways.

Reconstruction would involve the widening of curves, excavating and/or placing fill material to reshape the roadbed so that runoff is less concentrated. Road dips with rock armored outlets may be installed to better disperse runoff from road surfaces. Construction of armored overflow dips at certain culverts would ensure that if the culvert is plugged, stream diversion along the road would be minimal. Additional improvements may include out-sloping road segments, constructing low water crossings, installation of rip-rap aprons on fill slopes, and replacing culverts.

Road maintenance may consist of installation of road dips to better disperse runoff from road surfaces, brushing, blading the road surface, and improving drainage.

Road Obliteration

Approximately 8.5 miles of routes not added to the National Forest Transportation System (NFTS) within the project area are proposed for obliteration. Obliteration may involve recontouring, subsoiling, or abandonment. Abandonment is appropriate where the road has become completely overgrown with vegetation. Obliteration may also involve removing drainage structures, restoring vegetative cover, blocking access, or some combination of these treatments.

following characteristics: (1) platy, yellow bark on four panels (on at least ½ to ¾ of the bole), (2) downward or outward sweeping branches on at least the top 1/3 of the tree, and (3) a rounding or flat top, regardless of age or diameter.

Obliterating roads would promote vegetative recovery, decrease compaction, increase infiltration into the roadbed, increase soil stability, and reduce erosion.

Duration of Impacts

The direct effects would likely be limited to the project implementation phase and subsequent burning of piled fuel. Indirect effects are not expected to last beyond these implementation periods. Mechanical and thinning activities including removal of small trees and subsequent burning will not result in significant additive sedimentation of the streams and mitigation measures shown in Table 2 will reduce likelihood of harm to individual frogs.

Mitigation Measures:

Table 2. Sierra Nevada Yellow-legged Frog Conservation Measures.

Criterion	Actions
Mechanical Equipment	No heavy equipment allowed within 100 feet of perennial streams or 82 feet from intermittent streams that have suitable habitat for frogs (includes road decommission equipment, skid steer) unless surveys conducted immediately prior to equipment use confirms that SNYLF are not present. This does not apply to project activities on existing roads and stream crossings..
Chainsaw Thinning	Chainsaw thinning allowed within the inner RCA, but no piling of material within 82 feet of perennial streams over 4500 feet elevation (to prevent risk of burning frogs that choose to hibernate in piles). No piling within 25 feet of perennial or intermittent streams at all elevations. Chainsaw thinning would be restricted during the wet season, between November 1st to April 15th or the first wetting rain (72 hours with no drying period), whichever comes first. The district biologist may recommend dates be amended based on local site conditions.
Prescribed Burning	No prescribed fire ignited within 82 feet of streams. Pile burning will be in directional light, which means that the fire must start at one point only and let fire burn through to allow any wildlife species within the pile to escape. Piles for wildlife retention inside of the 100 foot riparian buffer will be built with wildlife pile prescriptions and will not be burned to provide for Sierra Nevada yellow-legged frog shelter habitat.
Tree and Brush Removal	To prevent loss or damage to suitable habitat, all tree and brush removals within the 100-foot buffer zone will be done by hand or with the use of chainsaws.
Aspen Management Conifer Removal	Trees may be removed with mechanical entry from 33 to 100 feet of the stream during the summer season (April 16 - Oct 31) when frogs are restricted to within 33 feet of streams. No mechanical entry will take place within 33 feet of live streams.
Sediment Production	Adhere to all Best Management Practices and Standard Operating Procedures to prevent sediment from reaching streams as a result of all project activities.
Fueling	Fueling of gas-powered equipment with gas tanks larger than 5 gallons will not occur within 150 feet of surface waters. Fueling of gas powered equipment with gas tanks less than 5 gallons will not occur within 25 feet of surface waters.
All	Within suitable habitat areas that were only surveyed during 2016, and areas surveyed in 2015-16 (*See* Figure 3), Sierra Nevada yellow-legged frog habitat occupancy will be assessed annually by the Forest Service within suitable habitat adjacent to proposed treatment areas. Occupancy will be determined through surveys by the Forest Service or qualified biologists. The qualified biologist will have documented training in the biology and field identification of frogs in addition to demonstrable experience surveying for and positively identifying Sierra Nevada yellow-legged frogs. The survey will cover all suitable habitat areas and should any life stages of the species be found (i.e. the site is occupied), the USFWS will be immediately contacted for consultation. One survey will occur in the Spring 2021 in areas that were surveyed in both 2015-16, and two surveys will occur in the Spring 2021 in areas that were only surveyed during 2016.

Action Area

Project Location:
The project area is located on top of the escarpment above the community of Janesville, CA; approximately 1.5 miles south of Thompson Peak, 3 miles south of Janesville, and 4 miles west of route 395. It includes all or portions of: Township (T) 28 North (N), Range (R) 13 East (E), Sections 31 through 33; T27N, R12E, Sections 1 and 12; and T27N, R13E, Sections 4 through 10 and 16 through 18 of the Mount Diablo Meridian (see Figure 1). The project area is within all or portions of Antelope Creek, Clarks Creek, McDermott Creek, and Boulder Creek Hydrologic Unit Code 6 watersheds. A very small portion of the project area overlaps the Boulder Creek Hydrologic Unit, but is not hydrologically connected to SNYLF critical habitat in this unit. The project area encompasses 4,424 acres of National Forest System lands located within the Last Chance Management Area (MA 40), as identified in the 1988 Plumas National Forest Land and Resource Management Plan. The elevation of the project area ranges from 5,800-6,800 feet with average annual precipitation ranging from 20 to 30 inches. Topography consists of flat to gently sloping terrain. Approximately 600 acres of the project area lies within a wildland urban interface zone (WUI), which is an area where human habitation is mixed with areas of flammable wildland vegetation (*See* Figure 1).

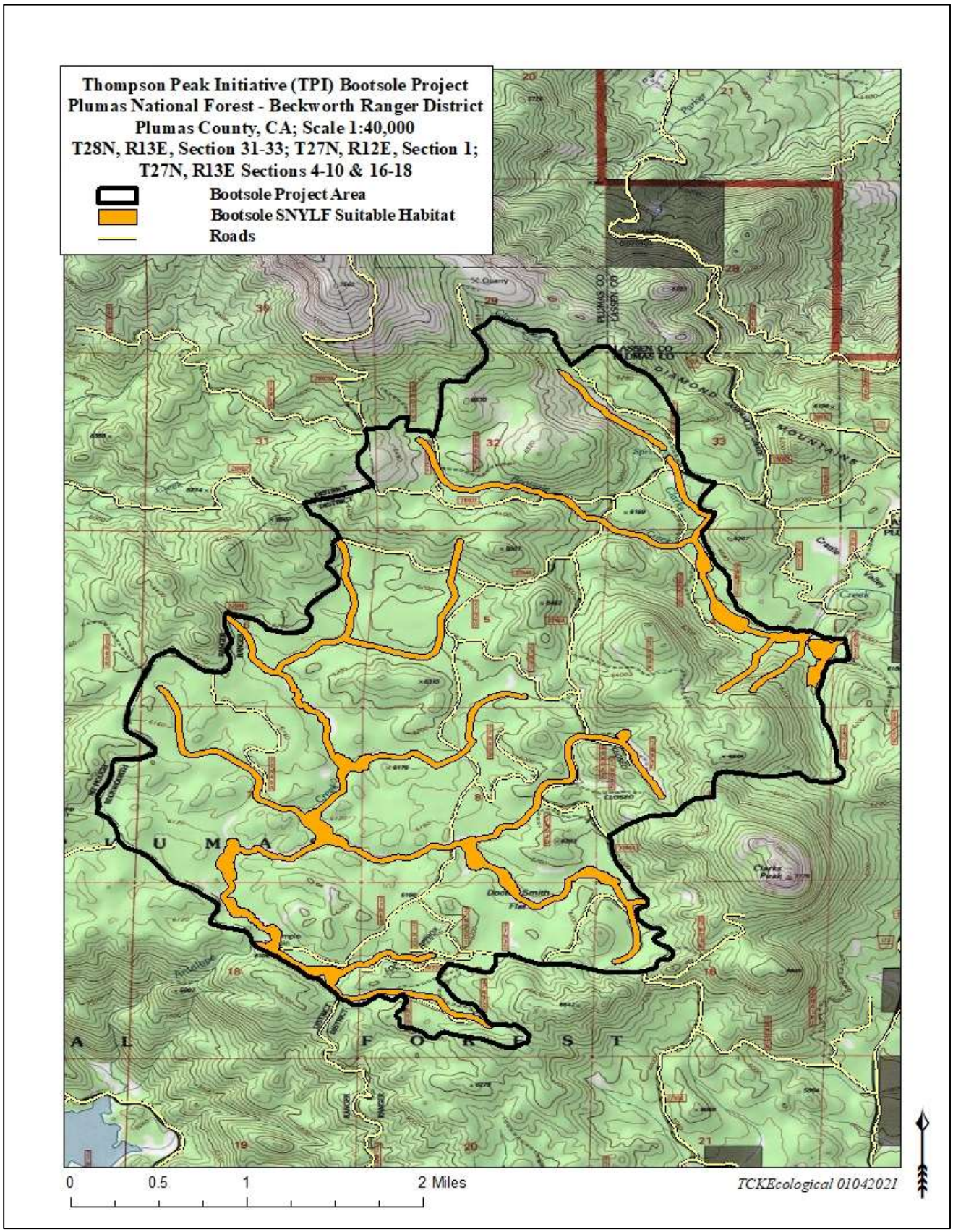

Figure 1. Bootsole project area and suitable habitat for Sierra Nevada yellow-legged frog within the project area.

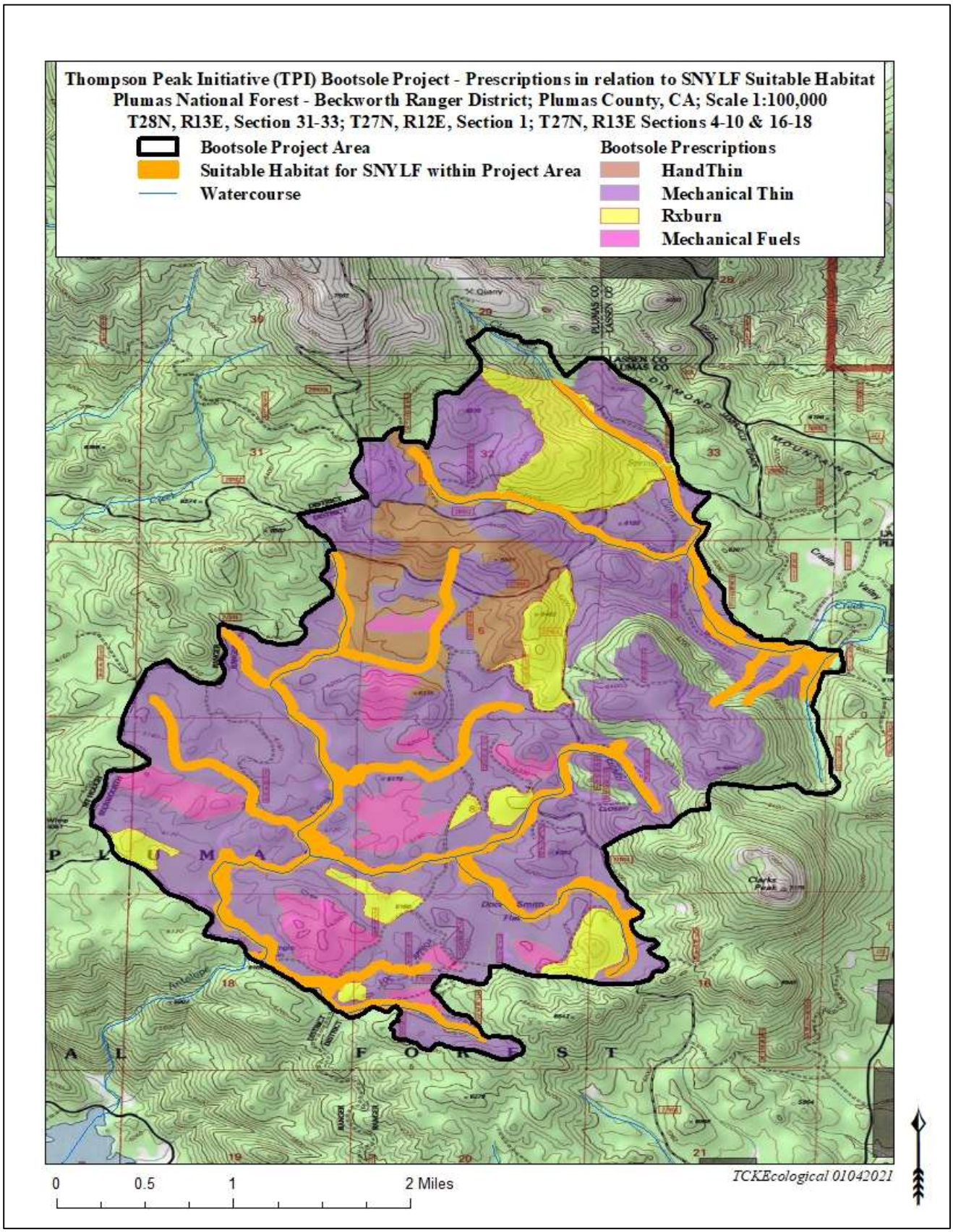

Figure 2: Bootsole Project Proposed Primary Treatments in relation to SNYLF suitable habitat.

IV. STATUS OF THE SPECIES AND CRITICAL HABITAT IN THE ACTION AREA

Affected Environment – Sierra Nevada Yellow-Legged Frog (*Rana sierrae*)

Population Status

The Sierra Nevada yellow-legged frog (*Rana sierrae*) is an endangered species endemic to Region 5. Most populations occur on public lands. *R. sierrae* (SNYLF) are located on the El Dorado, Inyo, Lassen, Plumas, Sierra, Stanislaus, Tahoe and Lake Tahoe Basin National Forests. *Rana sierrae* were once extremely abundant throughout their range. Historically *Rana sierrae* and *Rana muscosa* were found throughout the Sierra Nevada mountain range in California and Nevada and along the transverse range in southern California. Prior to 2007, these two species were considered to represent a single species; *Rana muscosa sensu lato* (Vredenburg et al. 2007). Northern Sierra Nevada frogs belong to *R. sierrae* based on genetic work, morphology and acoustics. As most studies cite *Rana muscosa sensu lato*, and both species occupy similar niches in their respective ranges, this document will address citations relevant to *Rana sierrae*.
The U.S. Fish and Wildlife Service (FWS) designated the SNYLF as endangered under the Endangered Species Act (Federal Register, Vol. 79, No. 82. April 29, 2014), and has designated critical habitat for the frog (Federal Register, Vol 81, No. 166. August 26, 2016). The project area is not within designated critical habitat.

Important Biological Requirements

Sierra Nevada yellow-legged frogs occur on moderate to high gradient channels on the Plumas National Forest (Natural Resources Information System (NRIS) wildlife database accessed 2014). Historically streams with a bank of less than 10 inches in vertical height with a moderately rocky, sparsely vegetated bank harbored the densest populations (Mullally and Cunningham 1956). Abundance of SNYLF has not been estimated in Plumas National Forest streams, nor do we understand whether the species' ecology differs in the Northern Sierra where populations are more dispersed and often stream dwelling. To address this knowledge gap, population monitoring of the SNYLF was conducted in the HFQLG project area during 2009-2011 (USDA 2013). This study monitored populations of SNYLF in a moderate to high gradient stream (5-12 percent). The high gradient reach was comprised of 91 percent (1,824 meters) high gradient and low gradient riffles, with the remaining 9 percent (17 meters) comprised of mid-channel and plunge pools habitat. Similarly, the lower gradient reach was comprised of 97 percent (356 meters) high and low gradient riffles, and 3 percent (42 meters) mid-channel pool habitat. Suitable habitat includes both aquatic habitat for breeding and rearing which includes permanent water that is of sufficient depth not to freeze solid to the bottom during the winter and aquatic nonbreeding habitat that may not hold water long enough for the species to complete its aquatic life cycle. This habitat provides for shelter, foraging, predator avoidance, and aquatic dispersal of juvenile and adult frogs. Suitable habitat includes upland areas extending 25 meters (82 feet) from the stream bank or shoreline. In areas between high mountain lake habitats, the upland area extends up to 300 meters from the shoreline. The entire area of meadow systems is suitable for dispersal and foraging.

Critical Habitat for the Sierra Nevada Yellow-legged Frog does not occur in the Bootsole project area. Primary constituent elements within the unit that are considered as suitable habitat include:

aquatic breeding, aquatic non-breeding and upland areas adjacent to aquatic habitats. Upland areas (watershed catchment basins) are adjacent to and surround suitable habitat and provide for the natural hydrologic regime of aquatic habitats. These upland areas should also allow for the maintenance of sufficient water quality to provide for the various life stages of the frog and its prey base.

Yellow-legged frogs are highly aquatic, typically utilizing only the immediate bank and emergent rocks and logs. Frogs have not been detected greater than 23 meters from a stream bank (MGW Biological and Klamath Wildlife Resources 2006). They prefer well illuminated, sloping banks of meadow streams, riverbanks, isolated pools, and lake borders with vegetation that is continuous to the water's edge (Martin 1992, Zeiner et al. 1988). Frogs space use patterns involve three main sites: overwintering, breeding and foraging.

Tadpoles and adults overwinter in deep pools with undercut banks that provide cover (Martin 1992). Suitable breeding habitat is considered to be low gradient (up to 4 percent) perennial streams and lakes. Streams in this category generally have the potential for deep pools and undercut banks which provide the habitat requirements of this frog. At relatively high elevations, breeding occurs between May and August as soon as the meadows and lakes are free of snow and ice. At lower elevations, breeding occurs between March and June once high water in streams subsides. Yellow-legged frogs usually lay their eggs in clusters submerged along stream banks or on vegetation. Tadpoles require at least one year before metamorphosis to the adult stage. Tadpoles in some high elevation populations may require up to three years before metamorphosis (Knapp 1996). Frogs appear to be quite tolerant of variable water temperatures, as they are able to fully function in water as cold as 3C (37.4F), and tadpoles have been found in water as warm as 27C (80.6F); however, these values may represent maximum tolerances for this species (Mullally and Cunningham 1956). Body temperature is regulated by being primarily diurnal, basking throughout much of the day, utilizing the warmer shallow areas in lakes and streams, and occupying colder water areas to reduce body temperature when necessary (Bradford 1984).

Adults primarily feed on aquatic and terrestrial invertebrates favoring terrestrial insects such as beetles, flies, ants, bees, and true bugs (Jennings and Hayes 1994). Adults also consume Pacific treefrog (*Pseudacris regilla*) tadpoles, and this prey item appears to be an important component of their diet in some populations (Zeiner et al. 1988, Pope and Matthews 2001). SNYLF tadpoles graze on algae and diatoms along rocky bottoms in streams, lakes and ponds. Garter snakes and introduced trout prey upon SNYLF tadpoles and adults (Zeiner et al. 1988, Knapp 1996).
A dispersal study was conducted in Bean Creek near Meadow Valley, California (MGW Biological and Klamath Wildlife Resources 2006). In the fall, as temperatures decline, frogs have been found to move as far as one mile downstream within the stream channel. The lateral movement of SNYLF away from the channel has been found to be no greater than 23 meters (MGW Biological and Klamath Wildlife Resources 2006).

Female frogs can live 13-14 years with males living 11-12 years (Matthews and Miaud 2007). Matthews and Preisler (2010) estimated over eleven percent of a population survived to an age of 10 years old (N = 44 individuals). Males lack vocal sacks and do not produce the typical mating calls that are common in many frog species, nor do males form breeding aggregations (Matthews and Miaud 2007). Frogs grow faster and are generally larger at lower elevations, likely because

the relatively longer summer at lower elevations provides greater time foraging and growth compared to higher elevation sites (Matthews and Miaud 2007). However, populations at higher elevations, where summer is relatively shorter, often exhibit higher annual survival rates in years with a relatively large snowpack.

V. ENVIRONMENTAL BASELINE AND CUMULATIVE EFFECTS

Analysis Area Surveys and Observations

The Bootsole project area is primarily comprised of upland eastside pine stands with meadows and aspen stringers, or narrow, connected aspen groves that follow the riparian corridor. Aspen is located both in upland and lowland meadows and riparian areas. There are infrequent Sierran mixed conifer stands at the highest elevations and northwestern portion of the project area. Dominant conifer vegetation within the project area includes Jeffrey and ponderosa pine with mixtures of white fir, sugar pine and incense cedar at higher elevations, and lodgepole pine in lower, moist areas. Suitable habitat for SNYLF has been identified throughout the project area along perennial and intermittent streams and water bodies above 4,500 foot elevation.

Occupied suitable habitat for SNYLF on the Plumas National Forest is typically above 4,500 ft. elevation. Current and historic SNYLF survey and observations from the Plumas National Forest and California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) were acquired and reviewed. The nearest SNYLF observation occurred in 2016 and is +/-1.5 miles west of the project area near Boulder Creek, south of Hallett Meadow at an elevation of +/-5,360 ft. Other locations of SNYLF observations within 3 miles of the project area include a 1993 observation of SNYLF north of Hallett Meadow and multiple observations in the Lowe Flat area +/-2.5 mi west/northwest of the project area. There was a 1994 occurrence of SNYLF in Clark's Creek in the Last Chance Creek watershed. No observations of SNYLF have occurred within the last 25 years within the Last Chance Creek watershed. A small portion of Critical habitat for the SNYLF that is not hydrologically connected to the project area has been identified within 3 miles of the project area associated with the Boulder Creek-Lone Rock Creek Unit, which includes Antelope Lake. Antelope Creek flows through the project area and eventually flows into Antelope Lake, critical habitat for the SNYLF. However, there is a fairly steep escarpment between the project area and Antelope Lake. No Sierra Nevada yellow-legged frogs have been detected in streams within the Bootsole project area (*See* Figure 2).

The project area overlaps with suitable habitat for Sierra Nevada Yellow-legged frogs where utilization is unknown. All suitable habitat within the project area was surveyed in 2016, which was a normal water year. A portion of the suitable habitat was surveyed in 2015 (*See* Figure 3). One VES protocol survey (Fellers and Freel 1995) will be completed in the spring of 2021 in SNYLF suitable habitat adjacent to proposed project activities, and two surveys will be conducted in suitable habitat that was only surveyed in 2016. As frogs have the ability to move and typically move along streams or wet areas, at least one survey visit will be implemented immediately upon work starting.

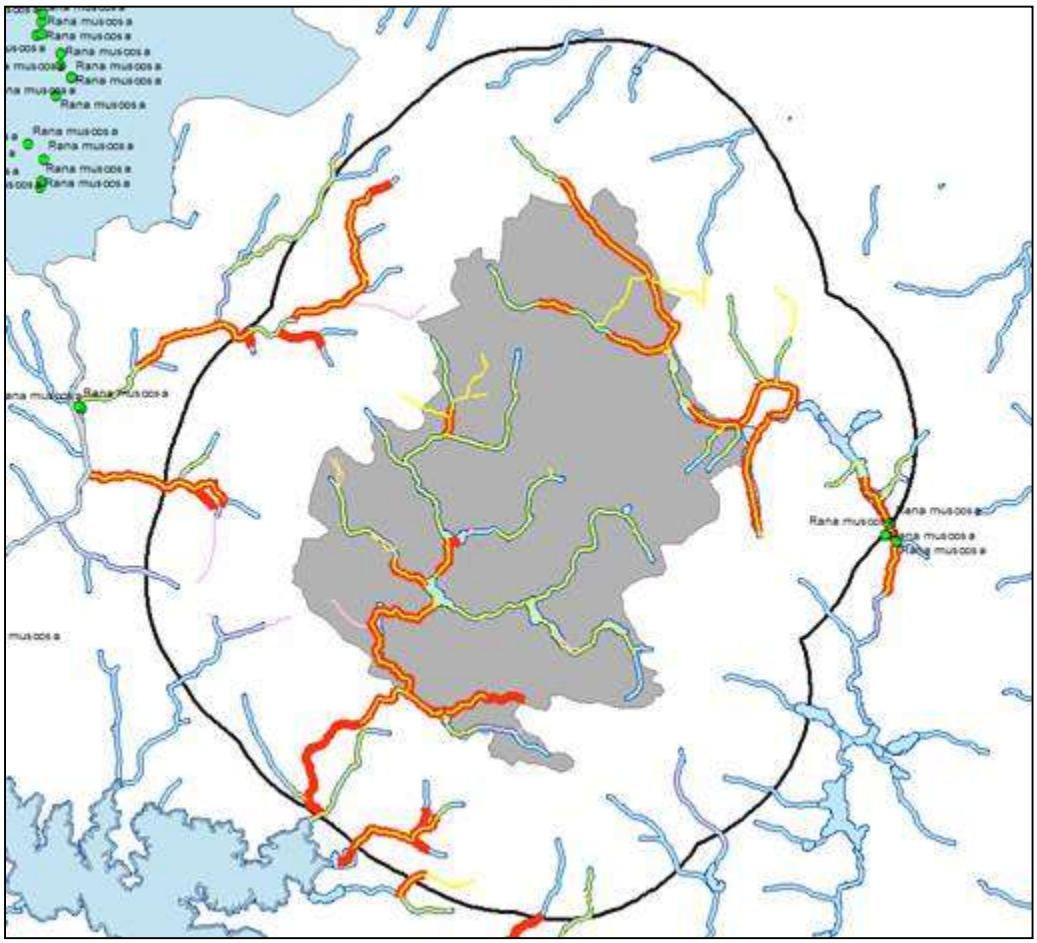

Figure 3: SNYLF Suitable habitat (blue) within the Bootsole Project Area (gray) that was surveyed during 2015 (red) and 2016 (yellow), a good water year.

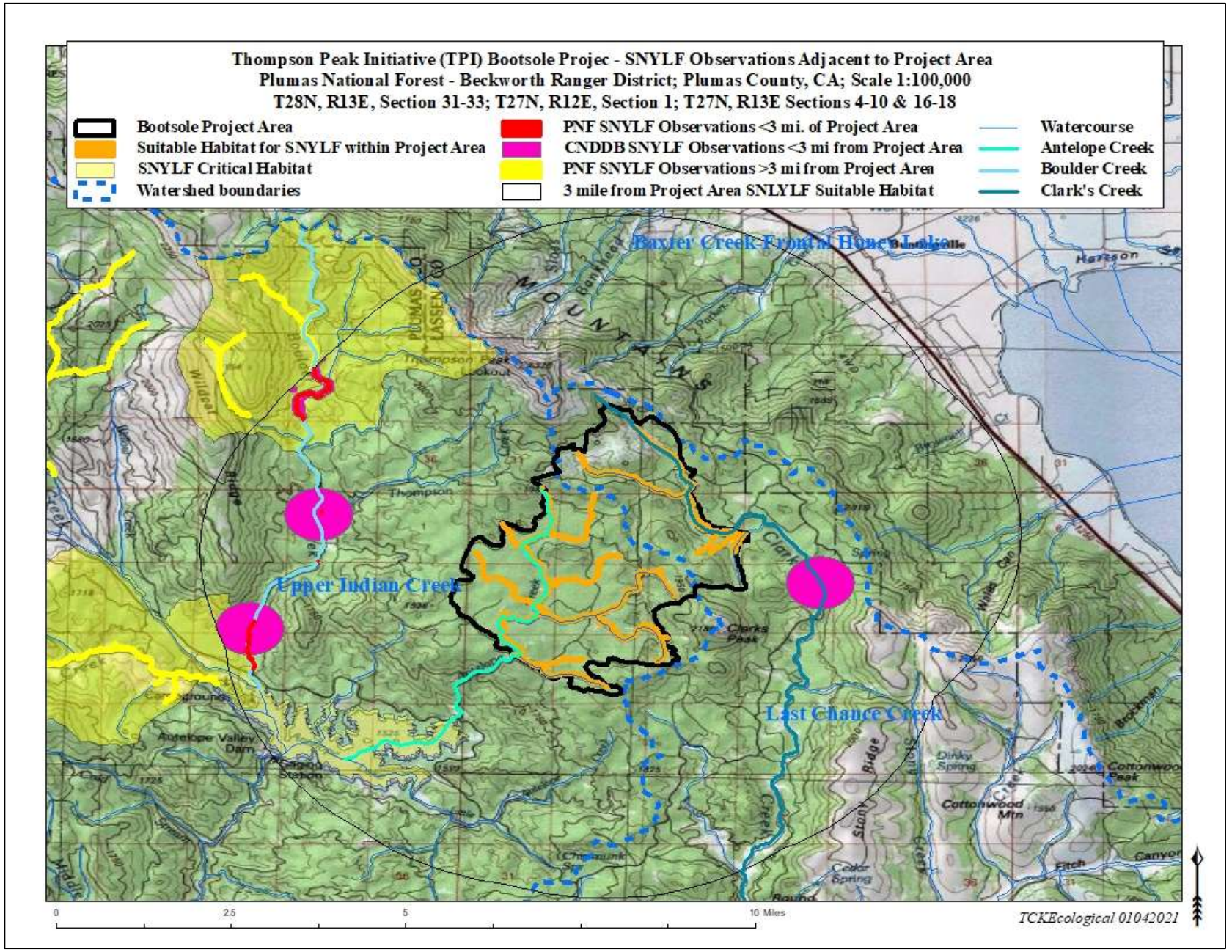

Figure 2. Bootsole project shown in black shown in relation to *Rana sierrae* observations and critical habitat.

IV. STATUS OF THE CRITICAL HABITAT IN THE ACTION AREA

Critical Habitat

Critical habitat for the Sierra Nevada Yellow-legged Frog does not occur within the Bootsole Project (Figure 2).

V. ENVIRONMENTAL BASELINE

Primary Constituent Elements for Sierra Nevada Yellow-Legged Frog and the Northern DPS of the Mountain Yellow-Legged Frog (USDI 2016 Federal Register 81:59063-59065)

Physical or biological features for the Sierra Nevada yellow-legged frog have been determined to be (1) space for individual and population growth and for normal behavior, (2) food, water, air, light, minerals, or other nutritional or physiological requirements, (3) cover or shelter, (4) sites for breeding, reproduction or rearing (or development) of offspring, (5) habitats protected from disturbance or representative of the historical, geographic, and ecological distributions of the species (USDI Fish and Wildlife Service 2016, 59063-59065).

Based on our current knowledge of the physical or biological features and habitat characteristics required to sustain the species' life-history processes, we determine that the primary constituent elements specific to the Sierra Nevada yellow-legged frog and the northern DPS of the mountain yellow-legged frog are:

(1) Aquatic habitat for breeding and rearing. Habitat that consists of permanent water bodies, or those that are either hydrologically connected with, or close to, permanent water bodies, including, but not limited to, lakes, streams, rivers, tarns, perennial creeks (or permanent plunge pools within intermittent creeks), pools (such as a body of impounded water contained above a natural dam), and other forms of aquatic habitat. This habitat must:

(a) For lakes, be of sufficient depth not to freeze solid (to the bottom) during the winter (no less than 1.7 m (5.6 ft), but generally greater than 2.5 m (8.2 ft), and optimally 5 m (16.4 ft) or deeper (unless some other refuge from freezing is available)).

(b) Maintain a natural flow pattern, including periodic flooding, and have functional community dynamics in order to provide sufficient productivity and a prey base to support the growth and development of rearing tadpoles and metamorphs.

(c) Be free of introduced predators.

(d) Maintain water during the entire tadpole growth phase (a minimum of 2 years). During periods of drought, these breeding sites may not hold water long enough for individuals to complete metamorphosis, but they may still be considered essential breeding habitat if they provide sufficient habitat in most years to foster recruitment within the reproductive lifespan of individual adult frogs.

(e) Contain:

(i) Bank and pool substrates consisting of varying percentages of soil or silt, sand, gravel, cobble, rock, and boulders (for basking and cover);

(ii) Shallower microhabitat with solar exposure to warm lake areas and to foster primary productivity of the food web;
(iii) Open gravel banks and rocks or other structures projecting above or just beneath the surface of the water for adult sunning posts;
(iv) Aquatic refugia, including pools with bank overhangs, downfall logs or branches, or rocks and vegetation to provide cover from predators; and
(v) Sufficient food resources to provide for tadpole growth and development.

(2) Aquatic nonbreeding habitat (including overwintering habitat). This habitat may contain the same characteristics as aquatic breeding and rearing habitat (often at the same locale), and may include lakes, ponds, tarns, streams, rivers, creeks, plunge pools within intermittent creeks, seeps, and springs that may not hold water long enough for the species to complete its aquatic life cycle. This habitat provides for shelter, foraging, predator avoidance, and aquatic dispersal of juvenile and adult mountain yellow-legged frogs. Aquatic nonbreeding habitat contains:

(a) Bank and pool substrates consisting of varying percentages of soil or silt, sand, gravel, cobble, rock, and boulders (for basking and cover);
(b) Open gravel banks and rocks projecting above or just beneath the surface of the water for adult sunning posts;
(c) Aquatic refugia, including pools with bank overhangs, downfall logs or branches, or rocks and vegetation to provide cover from predators;
(d) Sufficient food resources to support juvenile and adult foraging;
(e) Overwintering refugia, where thermal properties of the microhabitat protect hibernating life stages from winter freezing, such as crevices or holes within bedrock, in and near shore; and/or
(f) Streams, stream reaches, or wet meadow habitats that can function as corridors for movement between aquatic habitats used as breeding or foraging sites.

(3) Upland areas.

(a) Upland areas adjacent to or surrounding breeding and nonbreeding aquatic habitat that provide area for feeding and movement by mountain yellow-legged frogs.

(i) For stream habitats, this area extends 25 m (82 ft) from the bank or shoreline.
(ii) In areas that contain riparian habitat and upland vegetation (for example, mixed conifer, ponderosa pine, montane conifer, and montane riparian woodlands), the canopy overstory should be sufficiently thin (generally not to exceed 85 percent) to allow sunlight to reach the aquatic habitat and thereby provide basking areas for the species.
(iii) For areas between proximate (within 300 m (984 ft)) water bodies (typical of some high mountain lake habitats), the upland area extends from the bank or shoreline between such water bodies.
iv) Within mesic habitats such as lake and meadow systems, the entire area of physically contiguous or proximate habitat is suitable for dispersal and foraging.

(b) Upland areas (catchments) adjacent to and surrounding both breeding and nonbreeding aquatic habitat that provide for the natural hydrologic regime (water

quantity) of aquatic habitats. These upland areas should also allow for the maintenance of sufficient water quality to provide for the various life stages of the frog and its prey base.

Terrestrial habitat types in the Project's action area consist of a heterogeneous mosaic of different canopy covers dominated by Eastside pine and Sierra mixed conifer stands with meadows and aspen stringers, or narrow, connected aspen groves that follow the riparian corridor. The Project's action area also contains of a variety of aquatic habitats including springs, and perennial and intermittent streams that likely possess either seasonal or permanent pool channel types. As a result, all waters and adjacent terrestrial habitat in the Project's action area are considered to be suitable habitat (presence of primary constituent elements and elevation above 3,500 feet) for one or more life-stages of the frog.

VI. EFFECTS OF THE ACTION

Proposed Action- Direct and Indirect Effects

Direct and Indirect Effects of Heavy Equipment Use

Excepting aspen treatments and some road work, heavy equipment use (e.g. thinning, grapple piling, landing use) would generally not be allowed within 100 feet of perennial streams and special aquatic features, such as wet meadows; and 82 feet from intermittent streams.. The Sierra Nevada yellow-legged frog is highly aquatic, therefore the risk of direct injury from heavy equipment is minimal to absent. Though quantifiable data regarding sub-lethal effects in not well known for this species, it is logical to assume that some level of behavioral modification (e.g., basking, feeding) could be influenced by mechanized equipment some distance from occupied habitat. In addition to the general equipment exclusion, additional avoidance measures would be implemented for any areas determined to be occupied by pre-implementation surveys. Furthermore, U.S. Fish and Wildlife Service personnel would be contacted to determine the best course of action to minimize effects within newly occupied sites.

Indirect effects such as sediment mobilization and shade/temperature changes can occur with near-stream heavy equipment use. These effects are expected to be absent to minimal in nearly all areas due to project design features. Short-term sediment mobilization could occur due to road work, with a long-term decrease expected due to improved drainage. Though measurable sediment increase is unlikely to occur in aspen units, measurable vegetation change (removal of most conifers) would occur, increasing the amount of sunlight reaching the aquatic environment. Similarly, ground structure (e.g., logs/debris) could increase/decrease. Though the negative/positive effect of these habitat changes are not known for the frog, it is highly unlikely to occur in any occupied habitat due to the presumed effectiveness of pre-implementation surveys and associated protective measures.

Direct and Indirect Effects of Hand thinning project activities:

Hand thinning activities will include chainsaw use to remove conifer competition and increase aspen growth and remove fuels less than 6" dbh from the 300-acre California spotted owl PAC within the project area. Treatment within 82 feet of aquatic habitat would be limited to hand methods (e.g., chainsaws, dragging/piling) in most areas. Frogs could be injured/disturbed due to

trampling, and behavioral modification could occur due to noise. Removal of conifers will temporarily allow more sunlight to get to stream habitat increasing potential basking habitat for occurring amphibians. Piles will be made during thinning for subsequent burning. These piles will be ephemeral in nature and will be burned as quickly as possible after completion of thinning and allowing material to cure. These features will be made away from suitable habitat following mitigation measures and will not create off channel resting or over wintering sites. Impacts to individual frogs have been mitigated through felling trees away from stream and VES surveys preceding project implementation. As with other action types, if frogs are found to be present during pre-implementation surveys additional project modification and notification/consultation with the U.S. Fish and Wildlife Service would occur.

Direct and Indirect Effects of Prescribed Fire project activities

Similar to heavy equipment use, prescribed fire is highly unlikely to occur in occupied habitat due to survey requirements. In suitable unoccupied habitat, project protective measures would limit the scale and intensity of fire effects. For example, no piles would be burned within 82 feet of water, and fire would only be allowed to back into near-aquatic areas; therefore, there would be a very low risk of harming individual frogs. Since some areas would burn in near-water areas, a short-term reduction in ground cover can be expected along unoccupied stream reaches.

Table 3. Acres of riparian habitat types and habitat designated to protect Sierra Nevada Yellow-legged Frog affected by the proposed project activities.

	Total Acres affected through thinning and burning activity acres
Project area	4,233
Riparian Conservation Areas	395
Proposed Critical Habitat	0
Suitable Habitat	395
Occupied Suitable Habitat	Unknown

Proposed Action- Cumulative effects

The existing condition reflects the changes of all activities that have occurred in the past. The analysis of cumulative effects of the proposed action evaluates the impact on TES habitat from the existing condition within the Analysis Area. Cumulative effects on SNYLF could occur with the potential habitat alteration of the quantity and/or quality of habitat for this species as species possibly disperse through the project area.

Based on the lack of SNYLF detections, BMPs, and project design features protecting riparian

areas, the risk of cumulative effects from the proposed thinning activities would be very low. Additional activities in this vicinity include the Cradle Valley Forest Health Project and the Moonlight Fire Restoration Project. The Cradle Valley Forest Health Project was a No Effect determination for SNYLF. SNYLF suitable habitat does occur, current and future surveys have been completed and planned, and mitigations are in place. Project surveys failed to detect SNYLF in the project area. The Moonlight project is located within SNYLF critical habitat. The determination for the species was "May affect, likely to adversely affect"; for designated critical habitat the determination was "May affect, likely to adversely affect designated critical habitat". This was based primarily on the possibility of short-term habitat change in select areas, and the potential for species disturbance from heavy equipment use. Numerous project design features are expected to substantially reduce potential impacts, especially the following: 82 to100-foot heavy equipment water body exclusion zone, , and pre-implementation survey requirements that would increase protections if the species is found. Long-term benefit is expected, primarily due to road improvements and decommissioning. Therefore, in summary, there would be negligible cumulative effects from this and other projects to the watersheds in the immediate area.

Proposed Action- Direct and Indirect Effects to Critical Habitat

There is no critical habitat within the project area, and therefore project activities are not expected to directly impact SNYLF critical habitat. Mitigations and BMPs will minimize sedimentation reaching downstream critical habitat at Antelope Lake.

Proposed Action- Cumulative Effects to Critical Habitat

The existing condition reflects the changes of all activities that have occurred in the past. The analysis of cumulative effects of the alternatives evaluates the impact on Threatened and Endangered Species habitat from the existing condition within the analysis area. Cumulative effects on SNYLF could occur with the potential incremental loss of the quantity and/or quality of habitat for this species. Overall, increases in recreational use of National Forest System lands, and the utilization of natural resources on state, private and federal lands may contribute to habitat loss for this species. High intensity stand replacing fires have contributed and would continue to contribute to loss of habitat for this species as described in the master amphibian programmatic biological assessment (USDA 2014a). In summary, based on lack of species occurrence within the project area, BMPs, and project design features protecting riparian areas, the risk of cumulative effects from the Bootsole Project are insignificant and discountable.

VIII. CONCLUSION

Determinations for Proposed Action – Sierra Nevada Yellow-Legged Frog

The Bootsole project may affect and is not likely to adversely affect the Sierra Nevada Yellow-legged frog. Project design features have reduced the potential to directly affect the SNYLF through BMPs. There is little to no potential to indirectly affect their habitat by adding sediment to stream reaches. Project design features, such as equipment not entering streams, piling away from streams, and not falling trees into or across channel, would mediate some potential effects to possible Sierra Nevada yellow-legged frogs individuals or their habitat.

Best Management Practices shall be followed during mechanical thinning, hand thinning work, pile construction, pile burning, and broadcast burning. Although Sierra Nevada Yellow-legged frogs have not been detected within the project area, mitigation measures will be followed to ensure that downstream watercourses that may contain YLFs, and dispersal corridors (stream channels) are not impacted.

Determinations for Proposed Action – Sierra Nevada Yellow-Legged Frog Critical Habitat

The Bootsole Project may affect and is not likely to adversely affect designated critical habitat for Sierra Nevada yellow-legged frog. Primary constituent aquatic habitat elements would not be impacted. Upland habitat would be minimally impacted, but mitigation measures would limit the potential for sediment to reach streams.

IX. LIST OF DOCUMENTS

None applicable.

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